

WE CLAIM:

1. A method for generating a lexical knowledge base comprising the steps:
  - (a) parsing a segment of text with a natural language parser to obtain a logical form;
  - (b) extracting from the logical form a semantic relation structure, the semantic relation structure including at least a headword, a semantic relation, and a value;
  - (c) storing the semantic relation structure in association with the headword in the lexical knowledge base; and
  - (d) augmenting the lexical knowledge base by:
    - (1) inverting the semantic relation structure; and
    - (2) storing, in association with the value, the inverted semantic relation structure.

2. The method of claim 1 in which the parsing step includes:

- (1) applying a first set of rules to the segment of text to yield a syntactic structure corresponding thereto; and
  - (2) applying a second set of rules to the syntactic structure to produce the logical form.

3. The method of claim 1 which includes:

providing a natural language corpus;

analyzing the corpus to identify a collection of text segments therein;

performing steps (a) - (d) a first time on the identified text segments to produce an augmented lexical knowledge base; and

performing steps (a) - (d) a second time on the identified texts to further augment the knowledge base;

wherein the augmentation of the lexical knowledge base by the first performance of steps (c) and (d) enhances the parsing of the texts in the second performance of step (a).

4. The method of claim 3 which includes:

when performing step (b) the first time, extracting a first set of semantic relations; and

when performing step (b) the second time, identifying a second set of semantic

5 relations, the second set of semantic relations being different from the first.

5. The method of claim 4 in which the first set of semantic relations includes

"hypernym," and in which the second set of semantic relations does not.

10 6. A method for generating a lexical knowledge base comprising the steps:

identifying in a text a first semantic relation structure;

inverting the first semantic relation structure to yield a second corresponding, inverted semantic relation structure; and

15 storing data from the second semantic relation structure as part of a lexical knowledge base.

7. The method of claim 6 in which the identifying step includes automatically parsing the text with a natural language parser, the parsing including:

20 applying a first set of rules to the text to yield a syntactic structure corresponding thereto;

applying a second set of rules to the syntactic structure to produce a corresponding logical form; and

extracting from the logical form a semantic relation structure including at least a headword, a semantic relation, and a value.

25

8. The method of claim 7 in which the natural language parser analyzes for at least 8 of the following semantic relations: part, part\_of, typical\_subject, typical\_subject\_of, typical\_object, typical\_object\_of, purpose, purpose\_of, location\_of, located\_at, and synonym.

9. The method of claim 6 in which the identifying step includes string searching the text to discern semantic relation structures.

10. The method of claim 6 which includes:

5 (a) providing a natural language corpus;  
(b) analyzing the corpus to identify a set of text segments therein;  
(c) discerning from the text segments a first collection of semantic relation structures;  
(d) storing data from the first collection of semantic relation structures as part of the lexical knowledge base;

10 (e) inverting the first collection of semantic relation structures to yield a second collection of corresponding, inverted semantic relation structures; and  
(f) augmenting the lexical knowledge base by storing data from the second collection of corresponding, inverted semantic relation structures.

15 11. The method of claim 10 which includes performing steps (a) - (f), and then repeating steps (c) - (f); wherein augmentation of the knowledge base by the first performance of steps (d) and (f) enhances the discerning of semantic relation structures by the second performance of step (c).

20 12. The method of claim 11 which includes discerning a first set of semantic relation structures in the first performance of step (c), and discerning a second set of semantic relation structures in the second performance of step (c), the second set of semantic relations being different from the first.

25 13. The method of claim 12 in which the first set of semantic relations includes "hypernym," and in which the second set of semantic relations does not.

14. In a method of generating a lexical knowledge base comprised of parsing a collection of texts to identify semantic relation structures, and storing data from said

semantic relation structures in the lexical knowledge base, an improvement comprising iteratively parsing the same collection of texts so that semantic relations identified in one parsing operation enhance discernment of semantic relations in subsequent parsing operations.

5

15. The method of claim 14 in which the iterative parsing includes:

- (1) applying a first set of rules to the collection of texts to yield a collection of syntactic structures corresponding thereto;
- (2) applying a second set of rules to the syntactic structures to produce corresponding logical forms; and
- (3) applying a third set of rules to the logical forms to obtain semantic relation structures, said structures including at least one instance of a triple comprising a headword, a semantic relation, and a value.

10